Un-manned Satellites on Postage Stamps : 17

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Explorer-related Series

This is the seventeenth in a series of articles about un-manned satellites on postage stamps. This article features scientific/research satellites closely related to the Explorer-series: the **Injun**, **SolRad**, **GEOS**, and **ISEE** series. These series are related to the Explorer series because some of the satellites had Explorer names and numbers as well. In particular, the following names and number were synonymous:

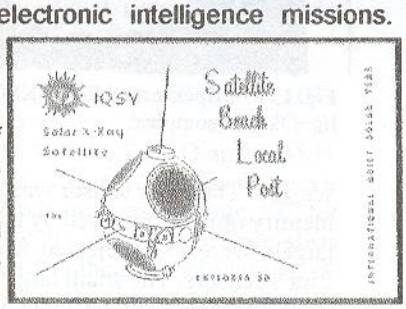
Explorer-25 = Injun-4
Explorer-29 = GEOS-1
Explorer-30 = SolRad-8
Explorer-36 = GEOS-2
Explorer-37 = SolRad-9
Explorer-40 = Injun-5
Explorer-44 = SolRad-10
Explorer-52 = Injun-6
Explorer-56 = ISEE-1
Explorer-59 = ISEE-3 (renamed ICE in 1983).

T.A.A.F stamp showing Explorer 52

Like the Explorer series, there are too many Explorer-related satellites to give details on the individual spacecraft. Rather, this article includes only basic information about the various series.

The **Injun** series consists of six satellites. Injun was a series of spacecraft designed and built by the University of Iowa to study the natural and artificial trapped radiation belts, auroras and airglow, and other geophysical phenomena. The last three of the series, Injun-4 through Injun-6, were also given Explorer series names and numbers.

The **SolRad (Solar Radiation)** name is generally synonymous with the name **Galactic Radiation Energy Background (GREB)** or **Galactic Radiation And Background (GRAB)**. The alternative designations were the result of the satellites' dual functions: the SolRad scientific payload was designed to monitor solar radiation, in particular Lyman-alpha and soft X-ray emissions, while the names GREB/GRAB were to hide the fact that these satellites were also the first U.S. electronic intelligence missions. There were many satellites in the SolRad/GREB/GRAB series. Three of them, SolRad8 through SolRad-10, were also given Explorer series names and numbers.



The **GEOS** series includes three satellites. The first two **GEOS (Geodetic Earth Orbiting Satellite)** were also given Explorer series names and numbers. These satellites were part of the U.S. National Geodetic Satellite Program (NGSP) designed specifically for geodetic studies. For GEOS-3 (not an Explorer satellite) the acronym was changed to **Geodynamics Experimental Ocean Satellite**. The GEOS-3 mission, which included a satellite altimetry experiment, provided the stepping stone between the NGSP and the Earth and Ocean Application Programme. The GEOS series covered in this article is the U.S.-series from 1965-1975. There was also an entirely different series of European GEOS satellites (ESA-GEOS) launched in the 1977-1978 time frame. Those ESA-GOES may be covered in a future article in this series.

The **ISEE (International Sun-Earth Explorer)** series includes three satellites, two of which, ISEE-1 and ISEE-3, were given Explorer series names and numbers. Together these satellites were designed to investigate solar-terrestrial relationships, examine the solar wind and plasma sheets, and investigate cosmic rays and solar flare effects in the interplanetary region between the earth and the sun. In addition, ISEE-3 was renamed ICE (International Cometary Explorer) in 1983 when its mission was changed from that of a heliocentric orbit, where it studied changes in the near-earth interplanetary medium, to a trajectory intercepting the tail of Comet Giacobini-Zinner, to study the interaction between the solar wind and a cometary atmosphere. ICE later encountered Comet Halley in 1986, making it the first spacecraft to directly investigate two comets.

Readers are referred to the authors' Website for reference images of the satellites in the Explorer-related series, as well as images of launch covers and many postal items that feature these satellites. As a complement to this article, a checklist of Explorer-related satellites is presented both opposite and on the Website developed by the authors: http://www.cira.colostate.edu/ramm/hillger/satellites.htm. E-mail correspondence is welcome. Don Hillger can be reached at hillger@cira.colostate.edu and Garry Toth at garry.toth@hotmail.com

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Checklist of Postal Items Showing Explorer-related Satellites: Injun, SolRad, GOES and ISEE

Country	Catalog Number*	Type of Item**	Year	Notes on Content
Injun				
French Southern and Antarctic Territories	C53		1977/9	Injun-6 / Explorer-52
Korea (North)	1510	One of MS7 (1511a (1506-1512)) + label	1976	Injun-1[1]
Korea (North)	1650	One of MS7 (1651a (1646-1652)) + label, 1511a overprinted	1977	Injun-1[1]
Rwanda	130		1965	Injun-1[1]
Rwanda	131		1965	Injun-1[1]
Rwanda	132		1965	Injun-1[1]
Rwanda	133		1965	Injun-1[1]
Rwanda	134		1965	Injun-1[1]
Rwanda	135		1965	Injun-1[1]
Rwanda	136	On both stamps of SS2 (136a-b)	1965	Injun-1[1]
SolRad / GREB / GRAB				
Belgium	None	In margin of cinderella of 2 imperforates	196?	SolRad-1[3]
Belgium	842 maxi	Maxicard	1973	SolRad-1/7[4]
Hungary	C254		1965	SolRad-1/7[4] (not San Marco-1)[8]
Korea (North)	1510	One of MS7 (1511a (1506-1512)) + label	1976	SolRad-3[1]
Korea (North)	1650	One of MS7 (1651a (1646-1652)) + label, 1511a overprinted	1977	SolRad-3[1]
Quaiti State (South Arabia)	Mi115-121	On selvedge of each of set of 7 stamps (Mi115-121)	1967	SolRad-1/7[4]
Rwanda	130		1965	SolRad-3[1]
Rwanda	131		1965	SolRad-3[1]
Rwanda	132		1965	SolRad-3[1]
Rwanda	133		1965	SolRad-3[1]
Rwanda	134		1965	SolRad-3[1]
Rwanda	135		1965	SolRad-3[1]
Rwanda	136	On both stamps (SolRad-3) and in margin (SolRad-1) of SS2 (136a-b)	1965	SolRad-3[1], SolRad-1[5]
Satellite Beach FL (U.S.)	Local		19??	SolRad-8
Uruguay	1124		1982	SolRad-1/7[4]
GEOS (U.S.)[6]				
Chad	708d	One of SS6 (708a-f)	1997	SMS/GOES (not GEOS)[2]
ISEE / ICE[9]				
Ascension	388		1986	ISEE-3 / ICE / Explorer-59
Bolivia	BL146	SS1	1985	ISEE-2 ?
Central Africa Republic	843		1986	ISEE-3 / ICE / Explorer-59
Chad	708f	One of MS6 (708a-f)	1997	ISEE-1 / Explorer-56, ISEE-2[3]
Djibouti	610a (Mi120A)	In margin of SS1 (610)	1986	ISEE-3 / ICE / Explorer-59
Equatorial Guinea	BL277 (o/p1)	Imperforate SS1 (BL277) 1st overprint	1977	ISEE-2
Gambia	609		1986	ISEE-3 / ICE / Explorer-59
Gambia	655	609 overprinted in silver	1986	ISEE-3 / ICE / Explorer-59
Germany (West)	None	Cancel	1970	ISEE-3 / ICE / Explorer-59
Hungary	2972		1986	ISEE-3 / ICE / Explorer-59
Malagasy Republic	797 (Mi1063)		1987	ISEE-3 / ICE / Explorer-59
Malagasy Republic	797a (BL48)	SS1 (797)	1987	ISEE-3 / ICE / Explorer-59
Malagasy Republic	Mi2475	One of MS6 (Mi2473-2478)	2000	ISEE-3 / ICE / Explorer-59
Mauritania	619 (Mi889)		1986	ISEE-3 / ICE / Explorer-59
Mauritania	619a	SS1 (619)	1986	ISEE-3 / ICE / Explorer-59
Micronesia	344p	From MS20 (344a-t)	1999	ISEE-3 / ICE / Explorer-59 (not SMM repair)[7]
Micronesia	344q	From MS20 (344a-t)	1999	SMM repair (not ISEE-3 / ICE / Explorer-59)[7]
Paraguay	C642 label	Label with MS9 (5x (C642) + 4 labels)	1986	Poorly-depicted ISEE-3 / ICE / Explorer-59
Poland	2715		1986	ISEE-3 / ICE / Explorer-59
United States	None	Cachet on ISEE-3 launch cover	1978	ISEE-1 / Explorer-56, ISEE-2

*Scott catalog number, unless prefixed with Mi or BL for *Michel*.
**SS# = souvenir sheet, MS# = miniature sheet, where # = number of stamps in sheet, and the numbers in parentheses are the catalog numbers of the stamps in the sheet.

[1]Three satellites stacked together (Transit-4A, SolRad-3 [GREB-3], and Injun-1) in that order.
[2]SMS/GOES (Geostationary Operational Environmental Satellite), not GEOS as indicated on the stamp.
[3]Two satellites stacked together (ISEE-1 / Explorer-56, and ISEE-2).
[4]SolRad-1 through SolRad-7 are all basically identical.
[5]Two satellites stacked together (Transit-2A and SolRad-1).
[6]This list includes the U.S.-GEOS series only, not the ESA-GEOS series.
[7]The captions on Micronesia 344p and 344q are transposed: SMM (Solar Maximum Mission) repair, and ISEE-3 / ICE / Explorer-59.
[8]SolRad-1/7, not San Marco-1 as indicated on the stamp.
[9]ISEE-3 was renamed ICE (International Cometary Explorer) in 1983.